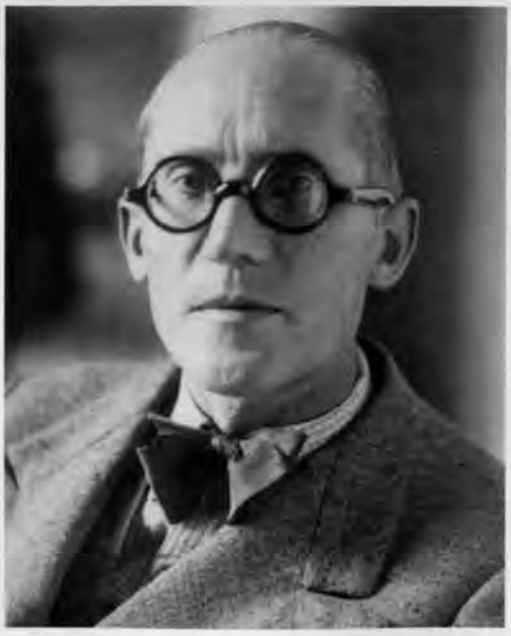
09 LE CORBUSIER PART 1 1906–1932

In 1987 the Hayward Gallery in London staged a centenary exhibition of Le Corbusier's work and gave it the nicely ambiguous title 'Architect of the Century'. Not everyone would agree with the implication that Le Corbusier was the most important architect of the twentieth century – Americans would probably reserve that title for Frank Lloyd Wright – but it is at least an arguable proposition. Whether we can go further and claim that Le Corbusier was 'architect of the century' in the sense that it was he who decided what the century should look like is more questionable, but he was the undisputed leader of the Modern Movement in the 1920s and 1930s, his creativity and originality remained undimmed in the post-war years right up to his death in 1965, and his influence on architects of his own and later generations was enormous. The number of his finished buildings is small by the standards of the giant international practices of the twenty-first century, but there is hardly a city in the world that has remained untouched by his ideas, transmitted at second and third hand. The signs of his presence can be discerned wherever there is an estate of tower blocks, a flat-roofed house on stilts or a wall of naked board-marked concrete. Non-architects who know his name will sometimes blame him for what they see as modern architecture's inhumanity. But among architects, to this day, he is simply 'Corb', their teacher and their hero.

Charles-Edouard Jeanneret (Le Corbusier).
Born in La Chaux-de-Fonds, Switzerland, 1887.
Died in Roquebrune-Cap-Martin, France, 1965.



Villa Fallet

Charles-Edouard Jeanneret was born and brought up in La Chaux-de-Fonds, a small town in Switzerland, close to the French border. He attended the local art school, at first with the intention of becoming a watch engraver like his father, though his personal ambition was to become a painter. His teacher, however, saw the architect in him and guided his studies accordingly. By 1905, with the help of a local architect, he had designed and built his first house, the Villa Fallet, on the north side of the town. He was 18 years old. The house still exists, in good repair. It is a chalet of a kind, richly ornamented in the Art Nouveau manner, with a steep-pitched roof. Jeanneret designed four more houses in La Chaux-de-Fonds over the next five years, including one for his parents. They are all traditional in style and owe their place in architectural history solely to the identity of their author and his later achievements.

While designing these houses, Jeanneret began to travel and make the personal contacts that would help him in the career to which he was now committed. In 1907 he visited Florence and Vienna, where he contacted Josef Hoffmann and became familiar with the work of Wagner and Olbrich. The following year he arrived in Paris, where he got a part-time job in the office of Auguste and Gustave Perret – the best possible place to learn the technology of reinforced concrete (see Chapter 4). When he was not reading Nietzsche's *Also Sprach Zarathustra* and imagining himself as the famous artist he would surely become, he took history classes in the Ecole des Beaux-Arts and studied the textbooks of Choisy and Guadet. In 1910 he went to Berlin, where he worked for the great classicist and proto-Modernist Peter Behrens (see Chapter 5). It is tempting to imagine him working alongside those other Modernists-to-be, Walter Gropius and Mies van der Rohe, who also worked in Behrens's office, but unfortunately the dates don't quite tally. Then in 1911 he set

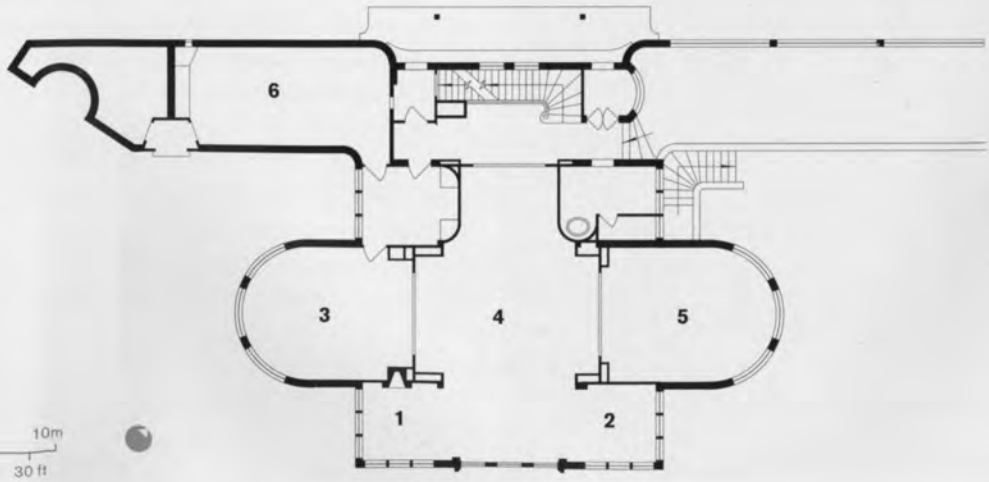
off in an easterly direction, to Budapest, Bucharest, Athens and Istanbul, where he filled his sketchbooks with vigorous drawings of ancient temples and mosques. More than a hundred years later, those sketchbooks are still available in facsimile editions for architecture students to admire and emulate. The later Le Corbusier would refer to this journey as the *voyage d'Orient*, as if it were a pilgrimage during which the future of architecture was revealed to him.

Villa Schwob

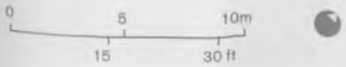
We catch a glimpse of that revelation in the Maison Domino project of 1914 (see Chapter 4) but there was a further distance still to travel before anything like a coherent Modernist style emerged. In 1916 Jeanneret designed another house in La Chaux-de-Fonds, the Villa Schwob, for friends of his parents. It is modern in that it is made of reinforced concrete – one of the earliest examples of the use of that material in a private house – but it is certainly not Modernist. A two-storey box, almost square on plan, is intersected symmetrically by a church-like form with apsidal ends. A big stepped cornice unites these forms and a set-back 'attic' storey reinforces the basically classical parti. History would certainly have ignored this building had its author not later become famous, but that author himself retained an affection for it and was happy to include it in later publications of his work. While the Villa Schwob

(Top) Villa Fallet, La Chaux-de-Fonds, Switzerland. Le Corbusier, 1905. Le Corbusier's first house, designed when he was 18 with the help of a local architect.

(Right) Villa Schwob, La Chaux-de-Fonds, Switzerland. Le Corbusier, 1916. Le Corbusier retained an affection for this early house, though it shows no signs of incipient Modernism.



Ground floor plan
1. Fire corner
2. Library
3. Dining room
4. Salon
5. Games room
6. Kitchen



was being built, Jeanneret moved to wartime Paris where his old boss, Auguste Perret, introduced him to Amédée Ozenfant, a painter and critic and the owner of a high-class fashion shop. The two soon developed a close professional relationship, with Ozenfant at first the dominant partner. Jeanneret's old ambition to be a painter was revived and he began a routine of painting every morning, leaving afternoons free to develop his architectural ideas. Later he would say that the two activities were inseparable, the former a necessary preparation for the latter. Ten years earlier the Cubism of Pablo Picasso and Georges Braque had taken western painting down a new road into a world in which the unity of vision that had prevailed ever since the invention of perspective in the fifteenth century had been broken. Cubism had replaced the assumption of a single viewpoint and a single moment in time with a looser, more dynamic framework in which objects could be viewed simultaneously from different viewpoints in both time and space. It had been a conceptual breakthrough and it had revolutionized modern art, but for Ozenfant and Jeanneret its decorative and Expressionist tendencies were out of tune with the austere and orderly character of the new machine age. In 1918 they published a manifesto called *Après le Cubisme*, which called for the restoration of the 'plastic continuum' of objects, in other words their integrity in time and space. In Ozenfant's and Jeanneret's own still-lifes, objects are accurately represented not as they appear to the eye, the way an Impressionist might represent them, but objectively in the manner of a design drawing. Jeanneret's *Still-life with a Pile of Plates* of 1920 is typical. The pile of plates is cylindrical, yet the top plate is depicted as a circle, as if seen in plan. Other objects in the painting include an open book, two bottles, two pipes, a tobacco jar and a guitar. The choice of objects is revealing. One might have expected something more obviously modern and machine-like – a typewriter, perhaps, or an electric fan – but instead they are all traditional, crafted artefacts. Jeanneret called them *objets-types*. They represent the perfect alignment of form and function, fine tuned over centuries and uncorrupted by style or authorship. In this sense they are 'pure', and the style of painting that celebrates them is therefore called Purism.

Still-life with a Pile of Plates. **Le Corbusier, 1920.** Common objects, or *objets-types*, depicted objectively: the essence of Purism.

It is paradoxical that two believers in the ultimately benevolent spirit of the machine age should find their inspiration in the anonymous products of centuries-old craft traditions. These objects perhaps represented an ideal to which mass production should aspire, but in the end it was their sensual qualities, their profiles and proportions, that Ozenfant and Jeanneret, as painters, admired. For Jeanneret in particular, the 'research' that he was conducting in his paintings was research not into the logic of mass production but into the artistic possibilities of form. We shall see soon how those *objets-types* began to appear, transformed, in his early Purist architecture.

Becoming Le Corbusier

In 1920, after the success of *Après le Cubisme*, Ozenfant and Jeanneret decided to publish a monthly magazine to promote their Utopian vision of a new society in which humanity and the machine would be reconciled. They called it *L'Esprit nouveau* and it eventually ran to 28 issues. In it the artistic and architectural implications of their vision were explored by a variety of contributors including Paul Dermée, Jean Cocteau, Louis Aragon and Auguste Lumière. Articles written years earlier, such as 'Ornament and Crime' by Adolf Loos (see Chapter 1) and Theo van Doesburg's De Stijl manifesto (see Chapter 7) were reproduced and brought to a new audience. Many of the essays, however, were written by Ozenfant and Jeanneret themselves under pseudonyms. Ozenfant called himself 'Saugnier', his mother's maiden name. Jeanneret revived an old family name, Lecorbésier, but detached the 'Le' and changed the 'é' to a 'u'. We can only guess what kind of subtle alteration the adoption of this pseudonym effected in Jeanneret's self-image, but from then on the architect in him became Le Corbusier, though the painter remained Jeanneret and it was not until 1928 that Le Corbusier finally prevailed.

One by-product of the *Esprit nouveau* publishing enterprise was to become far more influential than the magazines themselves. In 1923 Ozenfant and Jeanneret (or Saugnier and Le Corbusier) combined several of their *Esprit nouveau* essays into a book called *Vers une Architecture*, a book

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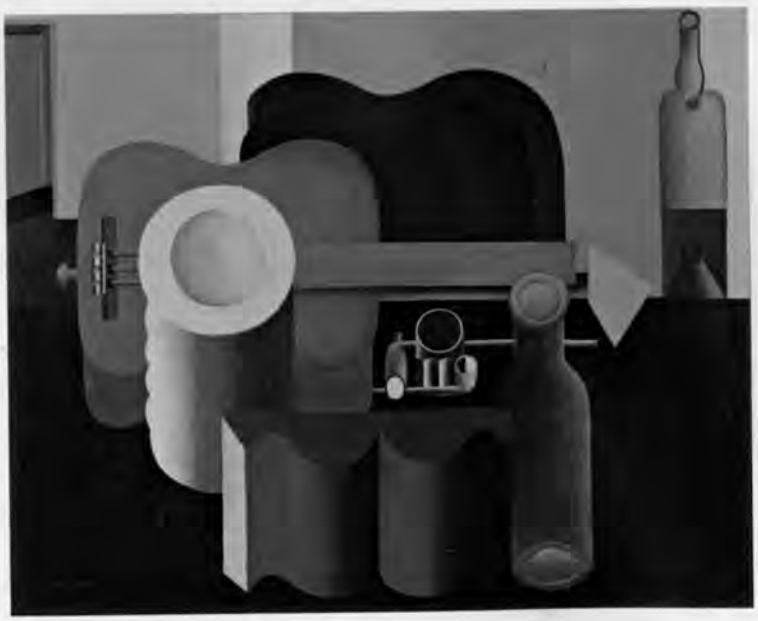

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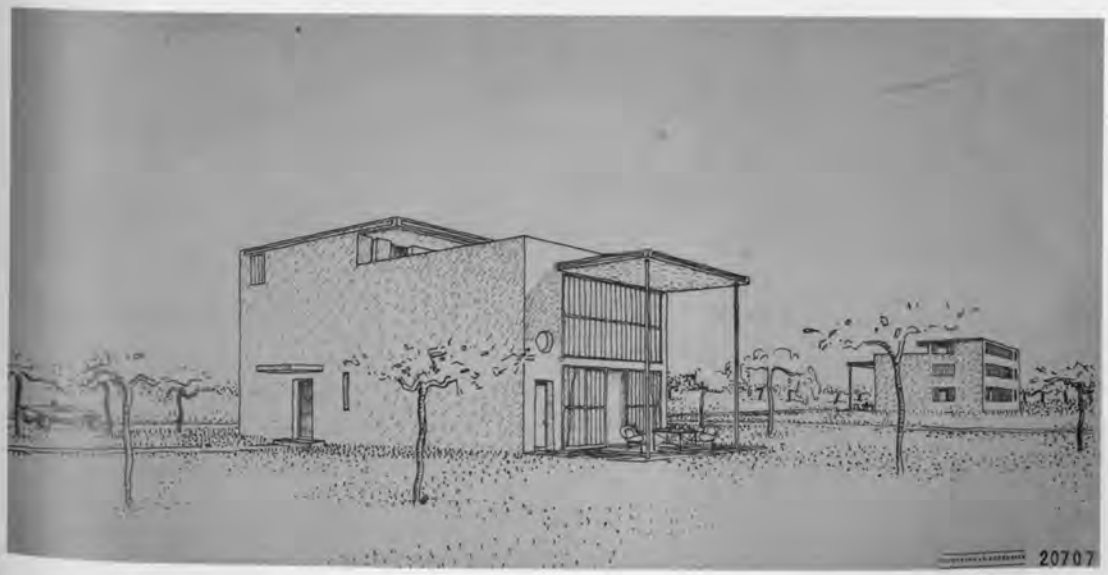
that is still in print and is still sometimes found on reading lists of first-year architecture students. In the first English edition of 1927, the title was translated as *Towards a New Architecture*.[1] It is a rather disjointed work with short, inwardly repetitive chapters on a variety of themes connected only by their general relevance to architecture. It is copiously illustrated by photographs and drawings, some of them pirated from other books and magazines. Its readers tend to remember most vividly the pictures of cars, ships and aeroplanes, because they convey a simple but powerful message: that modern architecture should be as functional and beautiful as modern engineering. Pictures of American grain silos and car factories were recycled from Walter Gropius's Werkbund yearbook of 1913 (see Chapter 5) but doctored to remove any vestiges of traditional architectural ornament. In other parts of the book, illustrative examples are taken from conventional architectural history. The chapter called 'Regulating Lines', for example, analyzes the proportions of the Senatorio Palace in Rome, the Petit Trianon at Versailles and the west front of Notre-Dame in Paris, as well as Le Corbusier's own Villa Schwob. There is a chapter called 'The Lesson of Rome' in which the power and simplicity of monuments like the Pantheon and Colosseum are celebrated. In the third of a trio of chapters called 'Eyes Which Do Not See', ancient and modern examples are juxtaposed to illustrate the process of progressive refinement in design. The relatively primitive Greek temple known as the 'Basilica' at Paestum is compared with a Humber motor car of 1907, while on the opposite page the Parthenon – the epitome of refinement – is compared to a racy Delage Grand-Sport of 1921. For Le Corbusier the products of engineering are beautiful because they are plain and simple, like the *objets-types* in his Purist paintings. Engineers, he argues, design functionally but also geometrically, combining simple shapes like cylinders, cubes and spheres, and architects should do the same. History has proved Le Corbusier wrong in this analysis. When certain dynamic functions – streamlining, for example – are fed into the functional design equation, the simple shapes disappear and are replaced by continuous flowing surfaces. What Le Corbusier called 'the engineer's aesthetic' was really the architect's aesthetic all along, but stripped of its traditional ornamental clothes.

Mass-market housing

In the last but one chapter of *Vers une architecture*, called 'Mass-Production Housing', Le Corbusier takes the opportunity to publicize his own house designs. First comes the Maison Dom-ino concept developed during the First World War (see Chapter 4), then the Maison Monol house-building system of 1919, with asbestos-cased rubble walls and curved concrete roof. It is not until we come to the Maison Citrohan that the idea of a standardized popular house type comes fully into focus. 'Citrohan' is a slightly obscure pun on 'Citroën', the car maker, so this is a house like a car, a product for a market rather than a piece of architecture. 'Mass-production' is, however, a misleading translation of *Maisons en Serie* because it implies prefabrication and factory production, which Le Corbusier never seems to have envisaged. The house is designed for rationalized, economical, site-based construction, with loadbearing flank walls of a material to suit the locality, concrete floors and a flat roof. Its most important feature is spatial rather than technical: a double-height main living space, which seems to have been inspired by a bistro in Rue Godot de Mauroy that Ozenfant and Jeanneret frequented. It was to become a standard feature of Le Corbusier's domestic designs right down to the Unité d'Habitation apartments of 1952.

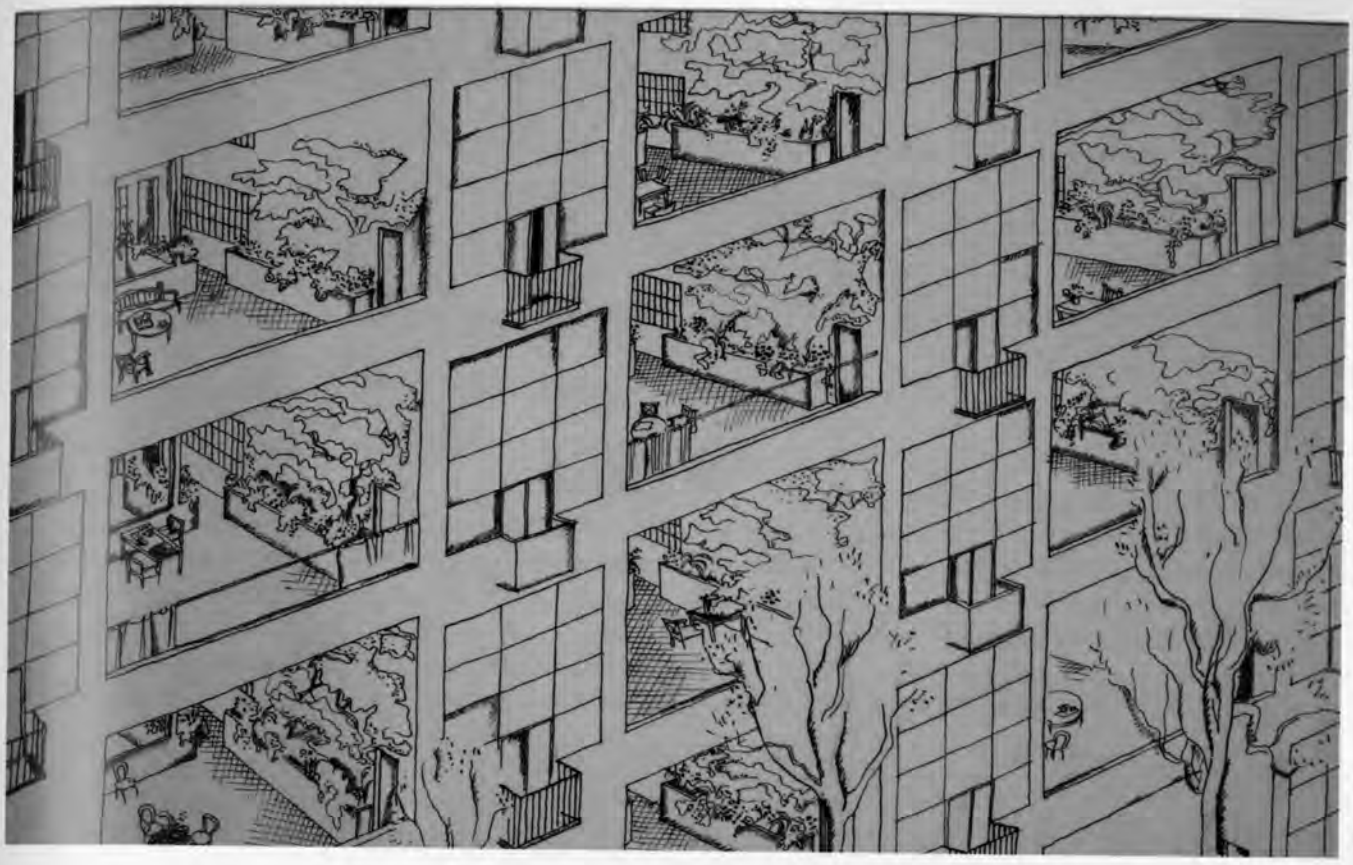
Maison Citrohan project. Le Corbusier, 1922. A version of this house type was built at the Weissenhof exhibition of 1927 (see page 104)



The idea of a standard, architect-designed, mass-produced, possibly factory-made house for the popular market – a house like a car – had been a Modernist ideal ever since Gropius's unsuccessful pitch to AEG of 1911 (see page 67). It was to remain an ideal, largely unrealized, throughout the twentieth century. Although millions of prefabricated houses were built in developed countries like the USA, Sweden, Japan and Australia, very few were architect designed and even fewer could be described as Modernist. Most used lightweight timber-framed panels of the kind pioneered in the American west in the 1830s, and adopted traditional classical or Gothic styles. Modernism's total failure to break into the field of popular housing – the real test of its claim to universality – is an important but neglected theme in the history of architecture. The Maison Citrohan is an early instance of the architect-designed mass-production house prototype, a category of architectural project that has attained a certain historical prominence but that had very little direct effect on the built environment.[2]

Only one permanent Maison Citrohan was built, at the Stuttgart Weissenhof exhibition of 1927 (see Chapter 8), by which time it had acquired a reinforced concrete frame and pilotis or columns that lifted it off the ground. Another, more interesting, version was built as an exhibition pavilion at the 1925 International Exhibition of Decorative Arts in Paris. It was named the Pavillon de l'Esprit Nouveau, after the magazine, and took the form of a stark concrete cube containing an L-shaped two-storey house and a roofed patio garden. The living room of the house was double height and lit by a huge industrial steel-framed window, just like the Citrohan prototype, but the idea had developed into something quite different. The concrete cube, though presented as if it were a detached suburban house, was conceived as an apartment to be mass produced and stacked up in eight-storey blocks known as Immeubles Villas. These blocks were in turn components in a plan for a whole city for three million people called the Ville Contemporaine, drawings of which were presented in an extension to the pavilion.

Pavillon de l'Esprit Nouveau, Paris Exhibition of Decorative Arts, France. Le Corbusier, 1925. The 1925 Paris Exhibition inaugurated Art Deco; Le Corbusier's contribution, however, was pure Modernist.

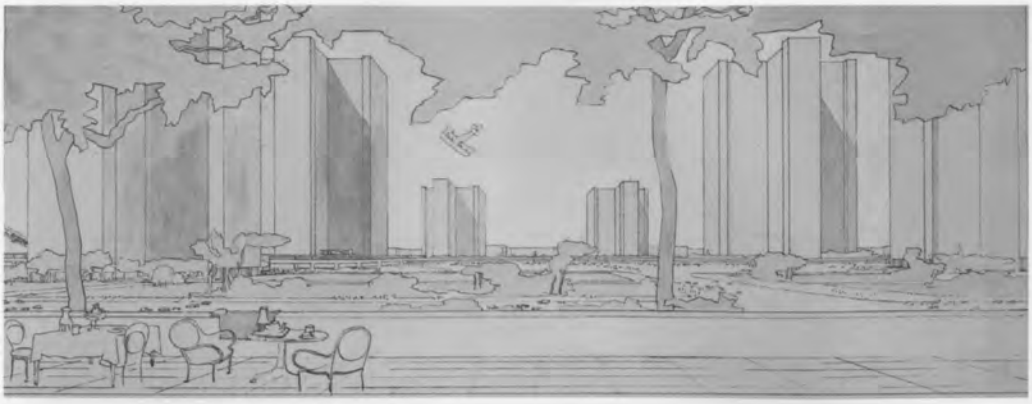


Immeubles Villas project. Le Corbusier, 1925. Pavillons de l'Esprit Nouveau stacked up to form an apartment block, with a garden for every apartment.

The breathtaking sweep of Le Corbusier's vision now becomes clear. The Pavillon de l'Esprit Nouveau represented nothing less than a whole new way of life incorporating *objets-types* at every scale, from the mass-produced Thonet chairs that furnished the house to the whole rationally planned and functionally zoned city. Voisin, the aeroplane and car manufacturer, had been persuaded to sponsor a special version of the Ville Contemporaine that envisaged the building of eighteen 60-storey skyscrapers in the district of central Paris known as the Marais. Was the 'Plan Voisin' a serious proposal? If so, by twenty-first-century standards, it would have been an act of civic vandalism. Or was its intention purely polemical, an electric shock to wake up the world to the true nature of modernity? This ambiguity has always accompanied discussions of Le Corbusier's urban projects, including the later Ville Radieuse, first exhibited at the third CIAM meeting in Brussels in 1930. But there is no doubt that in the years after the Second World War planners and architects took these projects seriously and were profoundly influenced by them. They thought that the old European city, with its multifunctional streets and squares carved out of a solid mass of stone buildings, was obsolete and must be replaced by the sunny openness of a park in which buildings stood proudly and nakedly like grain silos. It was not until the late 1960s, after various fragmentary built versions of the Ville Contemporaine had proved to be social and technical failures, that urbanists began to look again at the traditional city and note its virtues.

Villa La Roche and Villa Stein

But in the mid-1920s Le Corbusier's comprehensive urban vision had no hope of realization. His actual buildings continued to be one-off houses commissioned by wealthy patrons. Their style, however, had changed beyond recognition. The traditional chalets and villas of La Chaux-de-Fonds were left behind and Modernism was embraced wholeheartedly. The Villa La Roche–Jeanneret of 1925 was a far from straightforward commission for two houses, one for Le Corbusier's brother Albert and the other for Raoul La Roche, a banker who also needed a gallery in which to display his collection of modern paintings. With a complicated brief and an awkward site at the end of a cul-de-sac in the Paris suburb of Auteuil, it was never going to be a simple, standardized design like the Maison Citrohan. Le Corbusier nevertheless did his best to stick to Purist principles. The two single-aspect houses are of different sizes but the street facade is arranged to create the impression that they are a mirrored pair. Their walls are white, their windows plain and steel framed, and their gardens are on the roof. The gallery stands at right angles to the houses



Ville Contemporaine project. Le Corbusier, 1922. Le Corbusier's cities of the future look more appealing than those of, for example, Ludwig Hilberseimer (see page 101).

at one end and takes the form of a double-height, clerestory-lit hall raised on pilotis, with one curved wall and an internal ramp rising to a library at second-floor level. A ramp is an inefficient and time-consuming way to move from one level to another on foot, and on this occasion there is no staircase to provide a short cut, but by creating what Le Corbusier called an 'architectural promenade' it converts a cluster of static spaces into an internal landscape to be enjoyed as one might enjoy a garden.

'A house is a machine for living in': the hackneyed quotation from *Vers une architecture* is often cited as evidence of Modernism's supposed inhumanity. But the Villa La Roche is not remotely machine-like, and neither is the Villa Stein–de Monzie of 1927. It might be argued more convincingly, as Colin Rowe did in his famous essay 'The Mathematics of the Ideal Villa', that the Villa Stein is essentially a classical building, possibly modelled on the sixteenth-century Villa Foscari by Andrea Palladio.[3] The two buildings share the same overall proportions – eight units long by five and a half units deep by five units high – and the same ABABA pattern of single and double structural bays. The house is set far back on a narrow site in Garches, 12 kilometres (7½ miles) from the centre of Paris. Its front facade is very obviously

Plan Voisin project for Paris. Le Corbusier, 1922. A shining new city was envisaged, but also the destruction of one of Paris's most loved districts.

a thin, non-loadbearing screen, like an abstract painting on canvas. There is a drawbridge-like canopy over the front door and a top-floor balcony that seems to have been cut out of the canvas and folded down. Two narrow ribbons of window extend across the full width of the facade, right up to the outer edges. The other, private side of the house is more relaxed and open, with generously proportioned windows and a double-height covered terrace that extends outwards and lowers a gangway-like staircase into the garden. This is a large luxurious villa with a complicated plan designed to accommodate two families and their servants, but it is also recognizably a relation of the Maison Citrohan and the Pavillon de l'Esprit Nouveau.

Villa Savoye

The Villa Savoye at Poissy of 1931 is the best known of Le Corbusier's 'Purist' villas and is now a busy pilgrimage destination for architecture students from all over the world. It sits in the middle of a large site unconstrained by neighbours, trees or property boundaries. A shallow box, roughly square on plan, is raised on pilotis over a recessed ground floor that contains an entrance hall, a garage and servants' accommodation. All the main living spaces, including an open terrace, are at first-floor level, inside the box. On the roof, a second terrace or solarium is semi-enclosed by a curved, freestanding wall. These spaces are linked together by an architectural promenade that starts as soon as the car that brought us the 24 kilometres (15 miles) from Paris has entered the site. The driveway takes it under the building where it turns left and drops us at the main entrance before continuing to follow the curved wall round into the garage. We meanwhile find ourselves at the foot of a ramp in a glass-walled entrance hall. There is a spiral staircase to the left for the use of servants but we must ascend the ramp, which delivers us, in two flights, to the 'piano nobile' where we find the main 'salon' opening onto the terrace through full-height glass sliding doors. The terrace is open to the sky but is nevertheless a room with walls that have openings like windows. We are reminded of the terrace of the Pavillon de l'Esprit Nouveau, which is also a room but with a missing

Villa La Roche, Paris, France. Le Corbusier, 1925. The pedestrian ramp was one of Le Corbusier's favourite devices: a dynamic element to set space in motion.

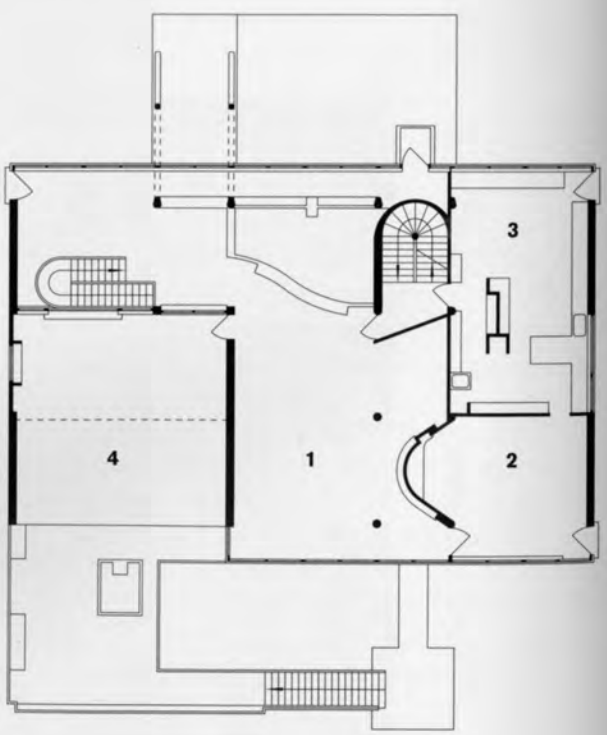
Villa Stein, Garches, France. Le Corbusier, 1928.
Colin Rowe argued that this was essentially a classical building, a version of a villa by Palladio.

wall rather than a missing roof. But this is not the end of the promenade. The ramp, now external, rises another two flights to the rooftop solarium where we can settle in deckchairs or enjoy the view over the valley of the Seine, perfectly framed by a window-like opening in the freestanding wall.

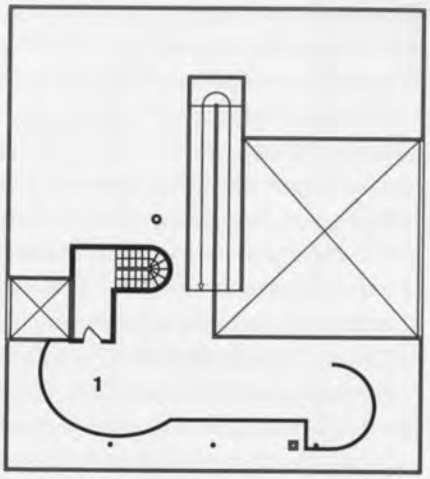
Five Points of a New Architecture

The Villa Savoye has come to be regarded as the exemplary masterpiece of high Modernism, and rightly so because it illustrates all the important features of the style. Le Corbusier himself summed them up in what he called the 'Five Points of a New Architecture':

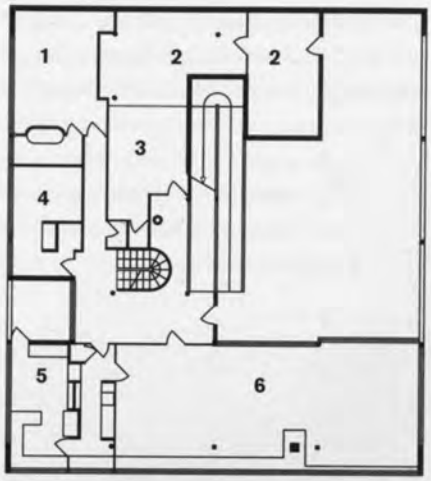
1. Pilotis. Modern buildings should be raised off the ground on columns allowing space to flow freely underneath.
2. Roof gardens. Roofs should be flat and the space should be used.
3. Free plan. The supporting structure of a Modernist building will be a steel or concrete frame, not loadbearing walls, so partitions can be placed anywhere and space can flow freely.

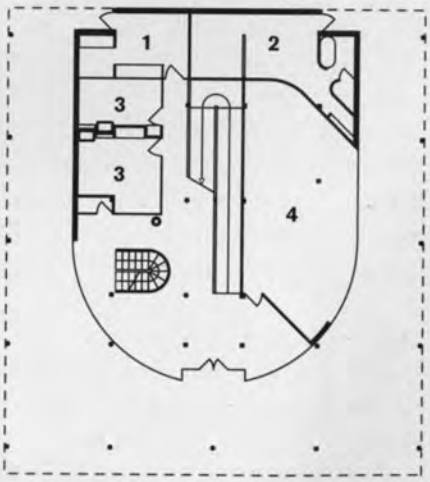


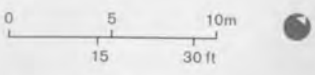
First floor plan
1. Living room
2. Dining room
3. Kitchen
4. Terrace



Villa Savoye, Poissy, France. Le Corbusier, 1931.
A three-dimensional Purist painting in which stairs, ramps, windows and windbreaks become *objets-types*.







Second floor plan
1. Sun terrace
5. Kitchen
6. Salon

First floor plan
1. Son's room
2. Madame's room
3. Bathroom
4. Guest room

Ground floor plan
1. Laundry
2. Chauffeur's room
3. Maid's room
4. Garage

4 Free facade. Similarly, if the external walls are not loadbearing, then openings can be placed to suit the views or the day-lighting without worrying about arches or lintels.

5 Long windows. If there are no arches or lintels, then why not have the widest windows possible, continuous 'ribbon windows' like those on the entrance side of the Villa Stein and on all four sides of the Villa Savoye's shallow box?

The Villa Savoye is exemplary in another way. It illustrates that Modernism means more than just Functionalism. If the building were to be assessed only on the grounds of function and economy it would be found wanting. It is a large house, yet the area of enclosed space is rather small. This is partly because of changes made during the design process to reduce the cost – the rooftop solarium, for example, was originally meant to be a suite of bedrooms – but mainly it is because nobody is measuring the efficiency of the design. It is a work of art, a three-dimensional Purist painting in which space is manipulated like paint on a canvas – contained and freed, shifted and balanced, held still and set in motion. The normal distinction between inside and outside is abolished. Gardens become rooms, roofs become floors, windows become balconies. If it is a machine for living in, then that machine is an ocean liner, an image perhaps deliberately evoked by the funnel-like profile of the solarium wall.

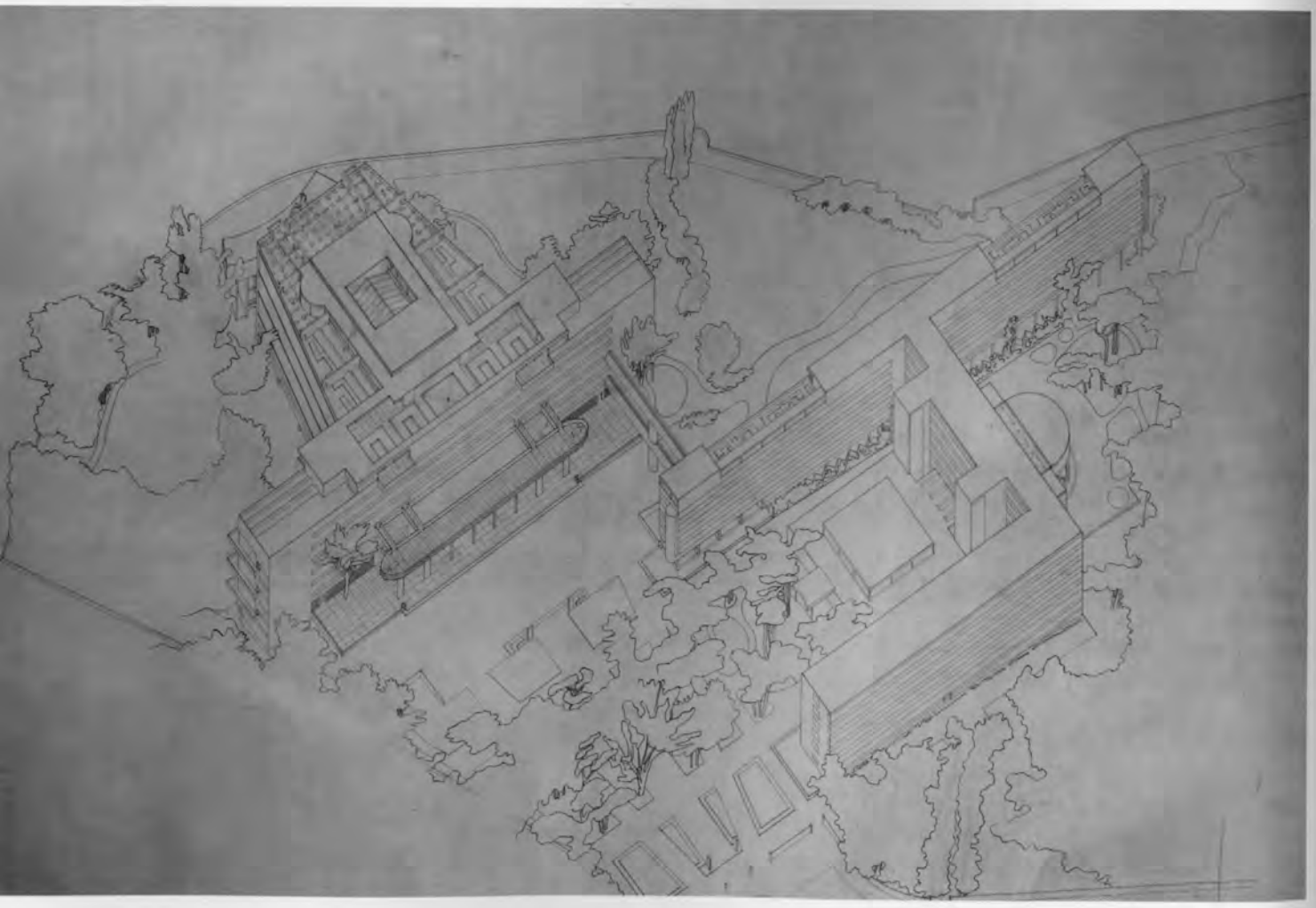
Public commissions

In 1927 Le Corbusier, in partnership with his cousin Pierre Jeanneret, entered the competition for the design of the League of Nations headquarters building in Geneva. It was to prove a turning point in his career, not because he won the competition but because he lost it in controversial

circumstances. The ensuing public row made his name and confirmed his position as the leader of the Modern Movement. His leadership was not unchallenged, however. The 'functionalist' wing of the movement, led by the critic Karel Teige, criticized the monumental turn that Le Corbusier's architecture had taken, both in the League of Nations design and in a project for a 'Mundaneum' or world centre of cultural co-operation sponsored by the Union of International Associations in Brussels. For Teige and his followers, including architects such as Hannes Meyer and Hans Wittwer who had also entered the League of Nations competition, Modernism's task was purely social and functional; it had no business glorifying government institutions with outmoded devices like colonnades and grand axes. Le Corbusier was more pragmatic. He agreed that functional efficacy was the first priority of a Modernist architect, but saw no reason why the symbolic power of Modernist forms should not be exploited. His League of Nations design is firmly Modernist in its details – its flat-roofed, piloti-supported and ribbon-windowed administration blocks, for example – but monumental in the symmetry of its auditorium block, which faces a *cours d'honneur* dominated by an equestrian statue.

Le Corbusier's growing reputation brought him new commissions, not for single houses now but for large public buildings. In 1928 he won a competition for the design of the Tsentrosoyuz building in Moscow for the Union of Co-operatives in the USSR. Its combination of office blocks and an auditorium was similar to the League of Nations design, but on a more restricted urban site. A change of client during construction, and much cost-saving and corner-cutting, meant that it never functioned very satisfactorily, though Le Corbusier's inflexibility over certain features of the design, like the ramps that were the only link between the entrance hall and the first floor, was undoubtedly a factor. His entry for the Palace of the Soviets competition in 1931 was on a different scale. It was to be an assembly rather than an administrative building, with two gigantic auditoriums, the larger seating 15,000 spectators, the smaller a mere 6,500. They share an axis and a vast ceremonial forecourt, but it is the externally exposed structure that declares most forcefully the architectural intentions and allegiances of the

Design for the League of Nations Headquarters. Le Corbusier and Pierre Jeanneret, 1927. Modernist details combined with a new, controversial monumentality.



whole project. Both auditorium roofs are suspended from deep beams in fan shapes, like the bones of hands. Those of the larger auditorium are in turn suspended from a huge parabolic arch. The boldness and clarity of the concept was clearly inspired by the spirit of Russian Constructivism. Le Corbusier did not win the competition but with hindsight we can see that he was never going to. Stalinism was turning against Modernism and the judges chose a traditional classical design by Boris Iofan, later to be developed into an absurd wedding cake surmounted by a gigantic statue of Lenin (see Chapter 14). It was never built.

Back home in Paris, Le Corbusier received two important commissions, both of which he saw as opportunities to develop residential prototypes for the city of the future. The first was from the Salvation Army for a Cité de Refuge, a hostel for the homeless, mainly destitute bachelors but also mothers and babies. The site is cramped and steeply sloping, forcing the building into a tight cluster of overlapping forms and spaces. Visitors first mount a flight of steps to the tall, open-sided box of the entrance porch. From here they cross a canopied footbridge over a sunken service road to reach the reception area, housed in a squat drum. Next in this short architectural promenade comes a rectangular hall, the heart of the social-services wing, with access to a large lecture theatre in its basement. The backdrop to this collection of Purist objects is an eight-storey slab containing private rooms and dormitories. Its big flat facade, originally all glass apart from a double attic storey with a saw-tooth plan, faces a little west of due south. During the first spell of hot weather after the opening of the building in 1933, the residents fried and the folly of the glass wall became apparent. The story of this failure is an important episode in the history of the relationship between modern architecture and environmental engineering. Le Corbusier thought he had invented an effective system for what we would now call airconditioning. His idea was that the air inside the building should be constantly recycled. A central plant would filter it, clean it and keep it at a temperature of 18 degrees Celsius (64 degrees Fahrenheit). This was called 'exact respiration'. To control heat loss and heat gain a separate system, called the 'neutralizing wall', would pass heated or cooled air through the broad cavity between two layers of glass. Cost cutting meant that the double glazing was never installed and the central plant had no cooling capability, but the probability is that the system would never have worked anyway. Various remedies were tried, including ordinary opening windows. Eventually, years later in the 1950s, the whole facade was rebuilt with a reduced area of glass and projecting concrete sunshades.

This episode is important because it highlights Le Corbusier's belief in a universal Modernist architecture. He thought that buildings all over the world, from the Arctic circle to the equator, should maintain an internal temperature of 18 degrees and should use similar means to achieve this uniformity. It was a prophetic vision, though it was the spread of the much simpler American system of air conditioning,

Tsentrosoyuz Building, Moscow, Russia. Le Corbusier and Nikolai Kolli, 1933. Le Corbusier was both influenced by, and an influence on, Russian Constructivist architects.

(Left) Cité de Refuge, Paris, France. Le Corbusier and Pierre Jeanneret, 1933. The south-facing facade as it was before the installation of *brises-soleil*.

(Below) Pavillon Suisse, Paris, France. Le Corbusier, 1931. A slab raised on pilotis in the approved manner, but a rough masonry wall makes an appearance on the other side.

of which Le Corbusier seems to have been unaware until his trip to the US in 1935–6, that made it a reality. But he was adaptable. The development of his architecture followed a zig-zag line and this was one of its sharp changes of direction. By 1936, advising Lúcio Costa and Oscar Niemeyer on their design of the Ministry of Education and Health building in Rio de Janeiro (see Chapter 20), he was recommending what he called *brises-soleil* – sun breakers – to shade the facades. This would now be described as a shift from active to passive climate control. Arguably, Le Corbusier was a pioneer of both. But it was also a larger, ideological shift, from the idea of a universal architecture to a greater awareness of regional differences in climate and culture. It is typical of Le Corbusier that, rather than tinkering with a technology, gradually improving it, he should replace one big idea with another.

The other important Paris commission of the 1930s was also for a hostel, this time to accommodate Swiss students at the Cité Universitaire on the south side of the city. The main elements of the Pavillon Suisse are similar to those of the Cité de Refuge, but smaller and simpler: a four-storey slab containing the student rooms is lifted up on pilotis and connected to a single-storey reception and refectory wing by a tower containing staircase and lift. The almost mechanical rationality of this arrangement, with straight rows of identical rooms along single-loaded corridors, was probably influenced by the communal housing schemes that Le Corbusier saw on his trips to Moscow in connection with the Tsentrosoyuz project. As at the Cité de Refuge, the extensive glazing of the south-facing rooms caused overheating. On the other side of the building, however, there are signs of a new acceptance of heavyweight construction and natural materials. The north and end walls of the block are clad in smooth stone panels, and the curved north wall of the refectory is of rough, uncoursed masonry. It is as if that tendency of early Modernism to abolish the solid wall in favour of the ever-lighter in-filling of a structural frame has reached its limit and changed direction. The Pavillon Suisse is a pivotal project in Le Corbusier's oeuvre. It looks back to the Purist villas and the Five Points, and it looks forward to a new, richer, more inclusive, more emotional style that would reach maturity in the 1950s and 1960s.

Charlotte Perriand

Le Corbusier's interiors were not furnished; they were 'equipped'. And the equipment, like the architecture, had to be designed from first principles. In 1927 he appointed Charlotte Perriand to take charge of this aspect of his practice. Their first meeting had not been a success. She had showed him her work, the outcome of her traditional training at the School of the Central Union of Decorative Arts in Paris, and he had dismissed her, saying 'we don't embroider cushions here'. But he had under-estimated the depth of her intellect, not least the extent to which she had been influenced by his own theoretical writings. He soon realized his mistake and for the next ten years she worked with him and his cousin and partner Pierre Jeanneret on now famous designs such as the Chaise à Dossier Basculant or 'sling chair', the Grand Confort armchair and the Chaise Longue. Shown here is Perriand herself demonstrating the Chaise Longue at full recline in the famous publicity still. These steel-framed items of equipment were designed not to conform to traditional types of chair and couch but to support the sitting, lying, sprawling and slumping postures that people actually adopt in domestic interiors. And they were conceived with industrial mass production in mind, though in practice they were handmade in small numbers for exhibitions and for houses like the Villa Church and the Villa La Roche.

Perriand would probably not have become famous without Le Corbusier, yet in hindsight it now seems that her time with him was only a preparation for a more interesting subsequent career. She continued to collaborate with Pierre Jeanneret and with the influential designer and metalworker Jean Prouvé (see page 361) until 1940. Then, on the very day that German troops marched into Paris, she left for Japan to become a design consultant to the government. One result of this cultural encounter was a version of the Chaise Longue made of bamboo, which sounds like a bad joke but was in fact part of an intelligent reassessment of the relationship between western and Japanese design – how Japanese attempts to reproduce western forms represented a missed opportunity for a mutually respectful cultural dialogue. She left Japan in 1943 and, unable to return to Paris, went to what is now Vietnam, where she married a military officer and became a mother. Back in France after the war she briefly worked again with Le Corbusier, designing the first prototype for the kitchens in the Unité d'Habitation (see page 224), and collaborated regularly with Prouvé on exhibitions and research projects. But she also had her own clients, including Air France, whose London premises in Bond Street she fitted out in the early 1960s. In the 1980s architectural scholars rescued her reputation from Le Corbusier's shadow and in 1985 she was the subject of a major retrospective at the Musée des Arts Decoratifs in Paris. She died in 1999 at the age of 96.

Chaise Longue, Charlotte Perriand and Pierre Jeanneret, 1929. Charlotte herself reclining on her most famous creation.